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SOCIO-ECONOMIC EFFECTS OF GHANA GOVERNMENT'S AFFORESTATION PROJECT ON BENEFICIARY FARMERS IN THE DORMAA AHENKRO DISTRICT OF THE BRONG AHAFO REGION OF GHANA

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ABSTRACT

The Government of Ghana introduced afforestation project with the aim of re-stocking depleted forest resources and to create employment in order to reduce rural poverty. This study was therefore conducted to assess the socio-economic effects of the afforestation project on the beneficiary farmers in Dormaa Ahenkro District of the Brong-Ahafo Region. Questionnaires were randomly administered to 80 farmers in the Diabaa and Kofisua communities in the Dormaa Ahenkro district who had adopted the afforestation project. Majority of the farmers (89.8%) were illiterates and aged between 20 and over 50 years, comprising 45 males and 35 females. Credit in the form of cash only, inputs only or both cash and inputs were distributed to the beneficiary farmers. Over 85.3% of the farmers indicated satisfaction for the support received. The project has improved both the economic and social life of over 80% of the beneficiary farmers. It has provided employment (98.7%), education opportunities (87.0%) healthcare access (79.2%) to the farmers. The project has also provided food (100%) and income (98.7%) to the farmers. As a result, they are able to pay their children's school fees, pay electricity and water bills, buy tools and equipment and also hire labourers for their farming activities. Delay in supplying inputs such as seedlings (87.2%), small plot sizes (76.9%) and inadequate financial assistance (30.8%) were identified as the major constraints to the progress of the project. It is recommended that the Forestry Services Division should supply inputs on time to the farmers and to expand the project to cover other depleted forest reserves.

Key words: afforestation project, beneficiary farmers, socio-economic benefits, forest degradation.

INTRODUCTION

The essence of Ghana's forest is revealed in its unique contribution to the stability of the environment, the economy and the socio-cultural values of the people (Kuwornu, 1996). The availability of forest contributes tremendously towards biodiversity conservation, soil regeneration and protection against soil erosion. Forest also helps in the maintenance of local climate, regulation of carbon cycle, regulation of hydrological cycle, mineral recycling, carbon sequestration and environmental quality.

Forests currently contribute 12.2% to the gross domestic product (GDP) (MOFA, 2011) and to the foreign exchange earnings of Ghana (MOFA, 2012). In the year 2005, 466 300 cubic meters of timber and non-timber products were exported, yielding a foreign exchange of 226.8 million US Dollars (ISSER, 2006). Forest reserves such, as Kakum National Park in the Central Region of Ghana, is a major tourist site, which has now become an important source of foreign exchange to the country. From 2001 to 2004, international tourists arrivals recorded an annual growth rate of 60%. The corresponding international tourist receipts increased steadily from US $447.8 million in 2001 to US $649.4 million within 2004 (Ghana Statistical Service, 2007). Forest is also an important supplier of energy in the form of fuel wood (firewood and charcoal) which accounts for over 75% of energy consumed in Ghana (Kuwornu, 1996).

These forests play very vital roles in supporting the livelihood of the inhabitants of Ghana in various ways. Trading in non-timber forest products (NTFPs: chewing sticks, pestles, canes, nuts, fruits, bush meat, fodder, artefacts and medicine extracted from the forest) are economically important within all areas of the high forest zone (Blay, 2004). The forest also serves as haven for numerous species of flora and fauna, and generally helps maintain the biological diversity of the area (Abeney & Owusu, 1999).

Despite the substantial contribution of the forest resources to the economy, degradation of Ghana's forest and the loss of biodiversity are assuming an alarming proportion (Baatuuwie et al., 2011; Dixon et al., 1996). The sector is now characterized by excessive harvesting of logs over and above the annual allowable cut (AAC), reduction in standing volumes of species, dwindling resource base, species depletion and loss of foreign exchange to the country (ISSER, 2006). It is estimated that about 60% of the reserved forests are degraded (FAO, 2001). FAO (2007) estimated that the Sub-Saharan Africa, including Ghana lost over 1000 km^2 of forest between 2000 and 2005. Ghana's forests originally covered about 36 percent (84,000 km2) of the total land area of the country (EU, 2006; Rice & Counsell, 1993). There are records of existence of relatively undisturbed forests, which harboured abundant biodiversity (Alpert, 1993), which protected fragile soils (FAO, 2007; UNEP, 2002), and regulated the supply of scarce water resources (Glantz & Katz 1985). However, deforestation and global climate change impacts are significantly causing a rapid loss of biodiversity in the country.

Forests in Ghana have suffered a serious decline because of over-exploitation to meet the growing socio-economic needs of the population (EPA, 2004). There are both direct and indirect causes of forest degradation in Ghana. The indirect (underlying) causes are those factors that trigger the actual causes and these include; poverty, ignorance, corrupt practices of governments, security and forestry officials, weak institutions, inappropriate policies, lack of law enforcement, lack of concern by local communities, land tenure issues among others. The continuous depletion of these resources is likely to lead to their eminent extinction in the long-term. This will have enormous consequences on the forests themselves and the livelihood of the population (Boon & Ahenkan, 2008).

Like many other tropical countries, the loss of Ghana's natural forests has been counteracted by comprehensive reform programmes in the forestry sector. The government of Ghana through the Forestry Commission has introduced afforestation project since 2001 to restock the forest reserves with important timber species and to prevent exploitation. The project equally seeks to provide job opportunities for citizens living in the vicinity and nearby areas, thereby reducing rural poverty. This study aimed at assessing the socio-economic effect of the afforestation project on the beneficiary farmers.

METHODOLOGY

The study was conducted at Diabaa and Kofisua communities in the Dormaa Ahenkro District of Brong Ahafo Region of Ghana. The region, which lies in the transitional vegetation zone in Ghana, has both moist semi-deciduous forest and guinea savanna vegetation types. Dormaa Ahenkro district is located in the semi-deciduous forest zone with bimodal rainfall pattern.

Descriptive survey was used for the study and was conducted through personal interviews and use of questionnaire. Each questionnaire contained 32 questions, and consisted of three parts namely personal data, social and economic benefits. The questionnaire was instructed in both open and close-ended forms. With close ended questions all the possible answers were provided. This helped to minimize ambiguity. On the other hand, no possible answers were provided for the open-ended questions and respondents provided their own answers from their own perspectives. Eighty (80) farmers from the area were randomly selected from the beneficiary farmers in the area who have adopted the government afforestation project. The interviews were conducted into two languages, Twi (local dialect) and English based on the educational background of the respondent. The local language was used to translate questions to respondents who were illiterates. This was done with the assistance from a staff of the Forestry Services Division in the district. All the 80 questionnaire administered were received.

The Statistical Product for Service Solutions (SPSS, 2001) was used to analyse the data obtained from the participating farmers. Results were expressed in frequency distribution and percentages.

RESULTS

Demographic characteristics of beneficiary farmers

Most of the respondent beneficiary farmers were males (58.4%) whilst the rest (41.6%) were females (Table 1). Most of these farmers were between the ages of 40-49 years representing 36.8% of the total farmers in the area and those between the ages of 30-39 years, representing 30.3% of the total farmers formed the second majority (Table 1).

Majority of the respondent farmers had either Primary, Middle School (MSLC) or Junior High School (JHS) education (59.0%). However 30.8% of them were illiterates without any formal education. Those who had Senior High School and tertiary education were few, representing 7.6% and 2.6% respectively (Table 1).

Type of credit given to beneficiary farmers

The type of credit support provided and its level of satisfaction are presented in Table 2. Credits available to the beneficiary farmers were mainly in the form of both cash and inputs such as seedlings, and field boots (76.6%). Others receive only cash (16.9%) and very few of them (6.5%) received only inputs. Most of these farmers showed varied satisfaction for the credit received for the project; 41.3% were very satisfied, 18.7% satisfied and 25.3% fairly satisfied. Only a few 14.7% of them were not satisfied with the support received (Table 2).

Table 1. Demographic characteristics of respondent farmers

Sex	Frequency	Age (yrs)	Frequency	Educational Level	Frequency
Male	45 (58.4)*	20 – 29	11 (14.5)	Illiterates	24 (30.8)*
Female	35 (41.6)	30 – 39	23 (30.3)	Primary/JHS/MSLC	46 (59.0)
		40 – 49	28 (36.8)	Senior High School	6 (7.6)
		50 & above	14 (18.4)	Post Sec/Tertiary	2 (2.6)

***** Figures in parenthesis are percentages of their respective frequencies.

Table 2. Type of Credit and its level of satisfaction

Type of Credit	Frequency	Level of satisfaction	Frequency
Cash only	13 (16.9)*	Very satisfied	36 (41.3)*
Inputs only	5 (6.5)	Satisfied	14 (18.7)
Cash + inputs	62 (76.6)	Fairly satisfied	19 (25.3)
		Not satisfied	11 (14.7)

***** Figures in parenthesis are percentages of their respective frequencies.

Socio-economic benefits derived from the afforestation project by the beneficiary farmers

Table 3 reveals both direct and indirect socio-economic benefits derived by the respondent farmers from the afforestation project. The project has mainly provided employment (98.7%), food (100%) and income (98.7%) to the beneficiary farmers. Consequently, the farmers are able to send their children to school (87.0%), participate in funerals (84.4%) and also increase their involvement in decision-making process both at home and within their communities (57.9%). They are also able to pay for their utility bills (water and electricity (72.7%) and employ labourers to assist in their farming activities (59.7%).

Influence of project on levels of income and standard of living of the beneficiary farmers

Most of the farmers (90.1%) were of the view that the project had increased their income level significantly (Table 4). Few of them (9.9%) did not see any significant change in their income level; none, however, indicated a decrease in income.

Majority of the respondent farmers (84.4%) said that the project had improved their standard of living; few of them (15.6%) however, did not agree to this assertion (Table 4).

Table 3. Socio-economic benefits derived by the farmers from the afforestation project

Direct Benefit	Frequency	Indirect benefit	Frequency
Food	80 (100)*	Education	67 (84.4)*
Income	78 (98.7)	Access to healthcare	63 (79.2)
Employment	78 (98.7)	Funeral participation	67 (84.4)
		Ability to pay utility bills	56 (72.7)
		Increased involvement in the decision-making in home and community	42 (57.9)

***** Figures in parenthesis are percentages of the corresponding frequencies.

Table 4. Influence of project on level of income and living standard of the respondent of farmers

Change in Income	Frequency	Improvement in life	Frequency
Increase	76 (98.7)*	Yes	67 (84.4)*
Decrease	0 (0.0)	No	12 (15.6)
No change	2 (1.3)		

***** Figures in parenthesis are percentages of the corresponding frequencies.

Constraints associated with the afforestation project

Most of the farmers (87.2%) complained about the small sizes of the plots allocated to them as the major constraint affecting the smooth implementation of the afforestation project (Table 5). They also complained of the delay in the supply of inputs to them (76.9%). Few of them (30.8%) however, complained of inadequate financial assistance.

Table 5. Constraints associated with the afforestation project

Constraint	Frequency
Inadequate financial assistance	24(30.8)*
Small plot size	68(87.2)
Delay in the supply of inputs	60(76.9)

***** Figures in parenthesis are percentages of the corresponding frequencies.

DISCUSSION

Over forty percent of the beneficiary farmers were female. This suggests that through the afforestation project, women now have easier access to land. Previously, under customary law women were restricted in their use of land (Agyemang et al., 2006). Their financial status has improved and they might have been empowered after the afforestation project.

Majority of the respondent farmers were within the reproduction ages of 30 to 49 years. This could be due to the fact that most of these farmers were married and hence would venture into any income generating activity to cater for their wives and children. Beneficiary farmers who are above 50 years might have to employed labourers to support them. This probably explains why some of the farmers complained of inadequate financial support from the project implementers. The involvement of more married people in the project has good implication for agricultural activity and hence for smooth implementation of the afforestation project. This is because most of the activities on the farm could be carried out using family labour. This also implies that, in taking decision concerning the crops to be grown on the land, the family will have to come to a consensus for the smooth running of the project.

The low level of education among the farmers might not have affected the afforestation project since farmers were not characterized by their educational background to decide on their eligibility for inclusion in the project. However, the farmers' educational background might influence their potential ability to read simple literature concerning the project (Yarney, 1995).

The provision of both cash and inputs such as seedlings and field boots to the beneficiary farmers might have contributed to the success and smooth implementation of the project. This is supported by the high satisfaction shown by the beneficiary farmers towards these credit facilities. The credit facilities mainly in the form of inputs was in the right direction, because if it was mainly in the form of cash, farmers would attempt to use or divert the money meant for the project for other activities which they consider to be more demanding than the growing of trees (Koomson, 1988) and consequently could have negatively affected the progress of the project.

The project has provided food, income and employment to most of the beneficiary farmers. This agrees with the finding of Agyemang et al. (2006) who reported that over 36,000 jobs had been created annually for a minimum achieved target of 10 000 hectares. Consequently, forest fringe community members have now stopped migrating to the urban centres in search of non-existing jobs. They further stated that plantation development had increased food production in the country, and that 120 000 metric tones of food were produced annually for the minimum achieved planting target of 10 000 hactares.

Most of the beneficiary farmers are now able to pay their children's school fees, access healthcare facilities and pay their water and electricity bills. This explains why most of them said that their well–being had been improved ever since they joined the project. Agyemang et al. (2006) also observed an improvement in the economic well-being of the plantation farmers since they were paid for all services rendered such as cleaning, peg cutting, planting and maintenance. Increased involvement in decision making both at home and in communities by the beneficiary farmers could stem from the increase in their income level, which makes it possible for them to play their civil roles at home, and in their communities. Agyemang et al. (2006) also reported that the capacity of the forest fringe communities to dialogue with the Forest Services Division through the Land Allocation and Tuangya Management Committees had been strengthened since they have played key facilitating and organizing roles.

According to Ansu-Gyeabuor (personal communication) the Government of Ghana through Forest Services Division is tackling the problem of the delay in supplying the inputs. If this is done the project's objectives could easily be achieved. With the issue of small plot sizes, the government may not be able to do anything about it since one main aim of the project is to reduce poverty levels of many rural folks. Consequently, the project implementers prefer smaller plot sizes for several beneficiary farmers.

CONCLUSION

The government afforestation project has been able to provide employment, income and food to rural folks within the forest fringe communities. It has improved the living standard of the people, in addition to restocking of the forest with important timber species. The main challenges confronting successful implementation of the afforestation project was the delay in supplying imputs to the farmers and smaller plot sizes.

REFERENCES

Abeney, E.A., & Owusu J.G.K. (1999). *Workshop for media personnel on forestry and wildlife reporting*. Proceedings of the Institute of Renewable Natural Resources, UST, Ghana, p. 95.

Agyemang, V. K., Manfo, K. K., Kasanga, K. R., Danso, E., Asare, A.B., Yeboah, O. M., & Agyemang, F. (2006). *Revising the Tuangya Plantation System: New revenue – sharing proposals from Ghana*. FAO Report National Forest Plantation Development Programme (NFPDP), Ghana Forestry Commission/ FAO, Rome, pp 80-87.

Alpert, P. (1993). Conserving Biodiversity in Cameroon. *Ambio* 22(1): 44-49.

Blay, D. (2004). Rehabilitation of degraded forests through the collaboration of local communities in the Dormaa District of Brong Ahafo Region of Ghana. In P. Wood and M. A. Yapi (Eds.), *Proceedings on Rehabilitation of Degraded Lands in Sub-Saharan Africa: Lessons Learned from Selected Case Studies*. IUFRO. pp. 31–35.

Baatuuwie, N. B., & Van Leeuwen, L. Ir. (2011). Evaluation of Three Classifiers in Mapping Forest Stand Types Using Medium Resolution Imagery: A Case Study in the Offinso Forest District, Ghana. *African Journal of Environmental Science and Technology*, 5(1), pp. 25-36.

Boon, E., & Ahenkan, A. (2007), Conservation and Management of Biodiversity in West Africa – Case Study of Ghana. In *Encyclopedia of Life Support Systems*, Paris, France: UNESCO.

Dixon, R. K., Perry, J..A., Vanderklein, E.L., & Hiol, F. (1996). Vulnerability of forest resources to global climate change: A case study of Cameroon and Ghana, *Climate Research.* 12, pp. 127–133.

European Union (EU) (2006). *Country Environmental Profile of Ghana*. Final Report, Framework Contract EuropeAid/119860/C/SV/Multi - Lot N°6: Environment.

Environmental Protection Agency (EPA). (2004). *Ghana State of the Environment Report*. Accra, Ghana: EPA. pp 11-51.

Food and Agriculture Organisation of the United Nations. (F.A.O.) (2001). FOSA Country Report-Ghana. In: *FAO Documentary Repository*. Rome: FAO.

Food and Agriculture Organization of the United Nations. (F.A.O). (2007). *Forest and Water Forests and water*. FAO, Unasylva No. 229 Vol. 58, 2007/4, Rome, 2007.

Ghana Statistical Services. (2007). *Economic Survey 2001 – 2005*. Accra, Ghana: Ghana Statistical Service.

Glantz, M.H., & Katz, R.W. (1985*). On the Economic and Societal Value of Long-Range Weather Prediction.* Proceedings of the Symposium on Current Problems of Medium and Long-Range Weather Forecasts. Budapest, Hungary, pp. 17–20.

ISSER (2006). *The State of the Ghanaian Economy in 2005*. Accra, Ghana: Institute of Statistical, Social and Economic Research, University of Ghana, Legon, Ghana.

Koomson, S. K.. (1988). *Rural Development in Ghana*. Accra, Ghana: Ghana University Press.

Kuwornu, S. (1996). *Ghana's Forest to Disappear in 2010*. A publication of the Green Earth Organisation.

Rice, T., & S Counsell (1993). *Forests Foregone: The European Community's Trade in Tropical Timbers and the Destruction of the Rainforests*. . London: Friends of the Earth, 214 pp.

United Nations Environment Programme. (UNEP) (2002). *Africa Environment Outlook: Past, Present and Future Perspectives*. Nairobi, Kenya: UNEP, 131pp.

Yarney, A. A. (1995*). Economics. An Introduction to Analysis and Policy.* Accra, Ghana: Sedco Publications.